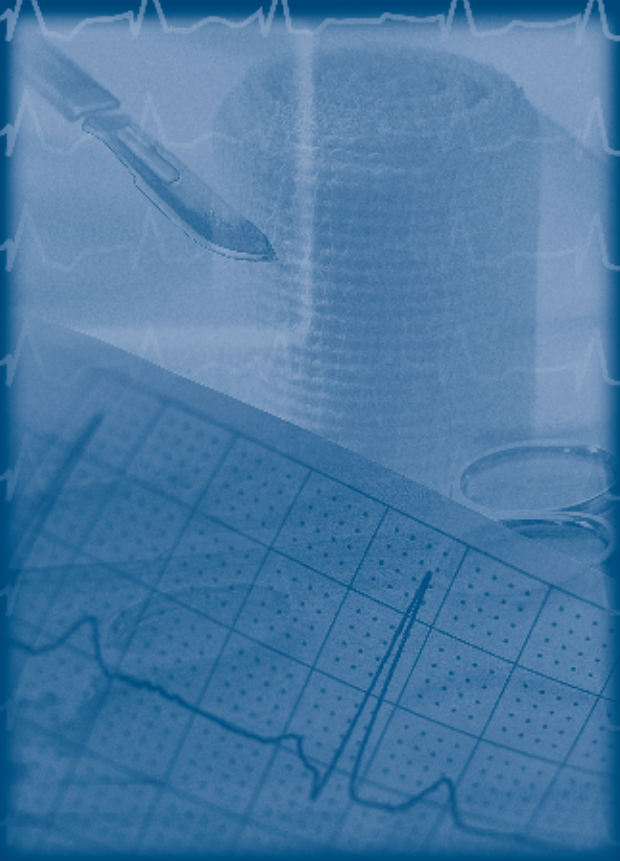
Cardiac Surgery in New Jersey

Consumer Report



NEW JERSEY DEPARTMENT of HEALTH and SENIOR SERVICES

Donald T. DiFrancesco
Acting Governor

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Acting Commissioner
Department of Health and Senior Services

Message From The Commissioner

We are pleased to present *Cardiac Surgery in New Jersey*, the state's fourth consumer report on coronary artery bypass graft surgery. This report summarizes the results of an analysis comparing mortality of patients for the hospitals and physicians performing bypass surgery.

Patients facing bypass surgery, as well as their families, usually have questions and concerns. We hope this guide can answer some of these questions, and help patients discuss their concerns and treatment options with their physicians.

The Department has worked closely with the Cardiovascular Health Advisory Panel to bring consumers and providers the best possible data on cardiac surgery outcomes. This expert panel includes physicians who specialize in cardiac surgery and cardiologists. I would like to thank the panel members for their efforts.

December 2001

Jeffrey T. D'Alessandro, Jr. MD MPH

Acting Commissioner
Department of Health and Senior Services

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Introduction

This report is for patients and families of patients facing the possibility of undergoing coronary artery bypass graft (CABG) surgery. It provides death rates for the 14 hospitals performing this common cardiac surgical procedure in 1999 and 52 physicians performing this common surgical procedure during 1998 and 1999.

For this study, the Department of Health and Senior Services collected data on the 16,485 patients who had bypass surgery (with no other major surgery during the same admission) in 1998 and 1999. All data have been "risk-adjusted," which means that data were adjusted to take into account the patient's health condition before surgery. This risk-adjustment allows for fair comparisons among hospitals and surgeons treating diverse patient populations. For hospitals, we used 1999 data, the most recent complete data set available for analysis. To produce risk-adjusted patient mortality estimates for bypass surgeons, at least two years of data are needed. So to produce risk-adjusted mortality estimates for surgeons in this report, therefore we combined 1998 and 1999 data, the most recent complete two years of data available.

An important goal of this analysis is to give hospitals and surgeons data they can use in assessing quality of care related to bypass surgery. There is strong evidence, from the handful of states that conduct similar analyses, that this information encourages hospitals and surgeons to examine their procedures and make changes that can improve quality of care and, ultimately, save lives.

In fact, New Jersey's death rate for bypass surgery has shown a significant decline. For 1999, the statewide death rate following bypass surgery was 2.89 percent. This is more than a 36 percent improvement since 1994. From 1998 to 1999, the statewide death rate actually increased slightly; The change was not statistically significant, however, when risk-adjusted.

Another goal of the report is to give patients and physicians information to use in discussing questions and issues related to bypass surgery. Please remember that the numbers in this guide are just one factor to consider in deciding where to have cardiac surgery. You and your physician together can make the best choice after full consideration of your medical needs. Also note that data in this guide are from 1998 and 1999 and may not reflect the current performance of specific hospitals, which may have changed their programs since then.

Heart Disease and Cardiac Surgery in New Jersey

Heart disease is the single largest killer of Americans. About every 30 seconds a person somewhere in this country will suffer a heart attack, and about once every minute someone will die from one. In New Jersey, cardiovascular disease, including heart disease, is the leading cause of death.

The most common form of heart disease is coronary artery disease. It occurs when the coronary arteries, which carry blood to the heart muscle, become clogged or partially blocked by fatty deposits on the artery walls. This can lead to chest pain, or angina, which is a warning sign for a heart attack. A heart attack occurs when a coronary artery is totally blocked.

Treatment Options

Treatment for coronary artery disease will vary for different patients. The choice of treatment depends on the nature and severity of the disease and other factors unique to each patient.

For some patients, lifestyle changes such as quitting smoking, eating a low-fat diet, and getting more exercise may be enough. Some patients require special medications. Others may need medical procedures such as angioplasty or coronary artery bypass graft surgery. Angioplasty reduces obstructions of fatty deposits in coronary arteries. Bypass surgery uses an artery or vein taken from another part of the body to re-direct blood around the clogged part of a patient's artery or arteries.

This report is about coronary artery bypass graft surgery. It will help you learn about the performance records of the 14 hospitals in New Jersey that offered this type of surgery in 1999, and the 52 surgeons who performed this operation in 1998–1999. This report will also help you begin talking with your doctor about bypass surgery. You and your physician should make decisions after taking all available information into account.

Performance Data

In 1999 there were 8,108 isolated bypass surgeries performed in New Jersey. In an isolated bypass surgery, no other major heart procedure is performed at the same time. The number of people who died in the hospital during or after isolated bypass surgery was 234, or 2.89 percent.

In evaluating the performance of hospitals, it would be unfair to make comparisons only on the basis of how many patients died. The mortality risk for patients undergoing bypass surgery varies significantly with how healthy patients are prior to surgery. For instance, a 75-year-old woman who has diabetes and had previous open heart surgery would be at higher risk for this surgery than a 50-year-old non-smoking man who has no history of chronic disease.

In order to produce fair comparisons, the New Jersey Department of Health and Senior Services developed a methodology that reports **risk-adjusted mortality or death rates**. The risk-adjusted rate gives "extra credit" to hospitals with sicker patient populations, so that those hospitals won't be at a disadvantage in the performance comparisons.

Each hospital was required to submit data which contain a risk profile for each patient undergoing bypass surgery. Key factors that influence a patient's chance of surviving the operation include:

- the patient's age and sex;
- whether the patient has various diseases, such as kidney failure;
- whether the patient has had previous heart surgery or experienced a heart attack;
- the ability of the patient's heart to pump blood;
- whether the patient has experienced heart failure;
- whether the patient has lung disease.

Weights were assigned for each key risk factor and calculations were performed for each hospital to produce **risk-adjusted mortality rates** as a fairer basis of comparison.

Performance Reports Lead to Improvement

This performance report can be used not only by you and your doctors, but also by hospitals to improve the quality of their care and their patients' outcomes. In New Jersey, the statewide, risk-adjusted mortality rate for bypass surgery has declined substantially—more than 36 percent from 1994 to 1999. Evidence from other states that have published similar performance reports also shows that mortality rates have declined and the overall quality of bypass surgery care has improved substantially.

Hospitals

In 1999, 14 hospitals in New Jersey were licensed to perform coronary artery bypass surgery. St. Barnabas Medical Center began cardiac surgery in May 1999 as a satellite of the Newark Beth Israel Medical Center program. Additionally, Englewood Hospital and Medical Center was licensed in July 2000 and Atlantic City Medical Center was licensed in August 2001. These newer cardiac surgery centers will be included in future reports when they have a full calendar year of data to report.

This report provides risk-adjusted mortality rates for each of the 14 hospitals. You will see that there are variations among them. Through statistical analysis, the Department has been able to determine in which cases the variations reflect real differences in performance, and not random variation or different levels of risk among patients.

This data should not be used as the sole factor in making choices about hospitals, but should be part of the discussion between you and your doctor.

Surgeons

A risk-adjusted mortality rate has also been calculated for each of the 52 surgeons who performed at least 100 bypass operations in one hospital during 1998–99. Statistics for surgeons who performed fewer than 100 operations during this period are grouped under the hospital where the operations were done in an "Other Surgeons" category. These surgeons are not listed by name, because they did not perform the minimum number of procedures necessary for the Department to have confidence in the results of the analysis. For these low-volume surgeons, therefore, risk-adjusted death rates are not necessarily an accurate indication of their individual performance.

Volume Affects Quality

Many studies nationally and in other states have shown that, in general, hospitals and surgeons that perform bypass surgery more frequently have lower patient mortality rates. However, some hospitals and surgeons with high volumes have relatively higher mortality rates, while others with low volumes have lower mortality rates.

Bypass Surgery Volume at New Jersey Hospitals

Figure 1 below shows how many bypass operations were performed in each of the 14 hospitals in 1999. You can see that some hospitals do more of these procedures than others, with totals ranging from 165 at UMDNJ University Hospital to 1,136 at Morristown Memorial Hospital.

Statewide Performance Data

In 1999, the mortality rate for the state was 2.89 percent, based on data on 8,108 patients who underwent this surgery.

Individual Hospital Performance

The graph in Figure 2 shows the risk-adjusted mortality rate of patients for each hospital in New Jersey performing bypass surgery in 1999. The risk-adjusted mortality takes into account both the patients' risk factors going into surgery and the actual mortality rate of patients in the hospital.

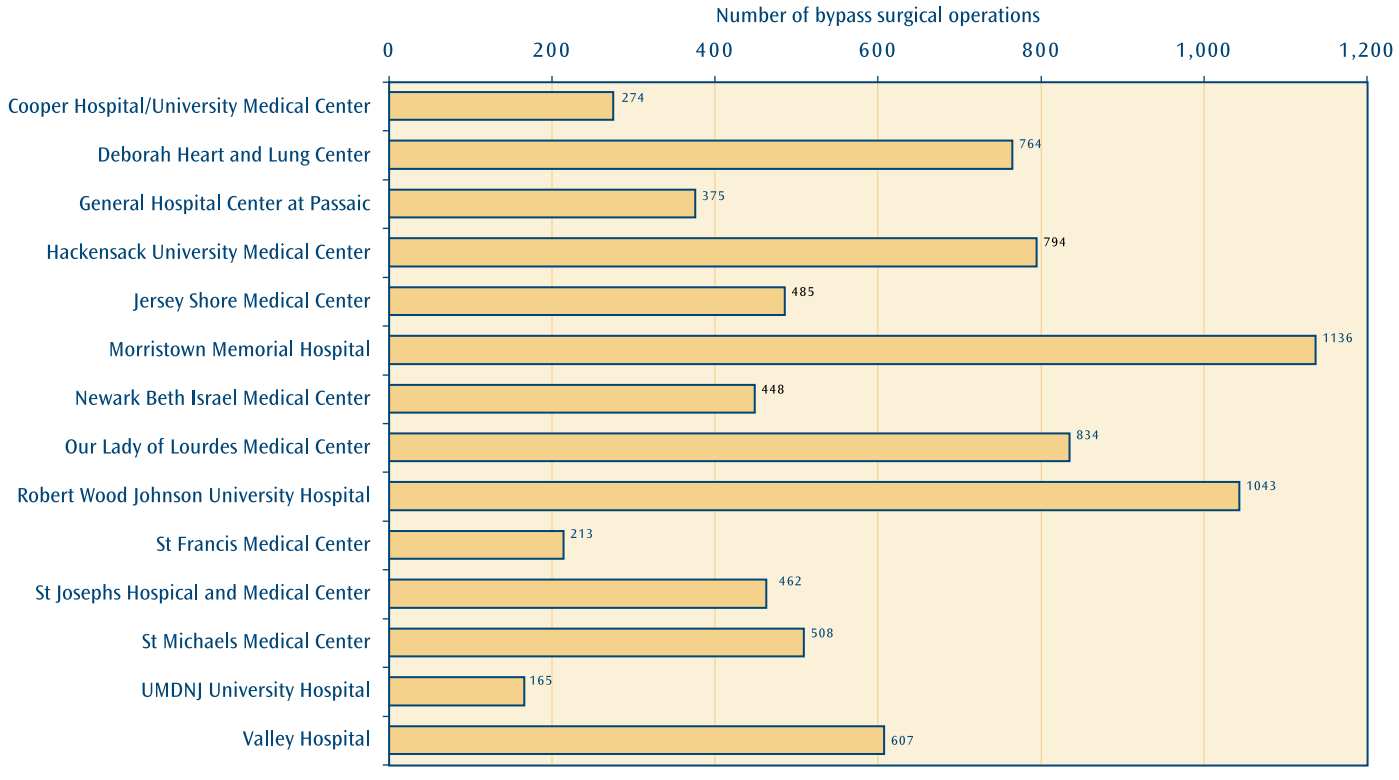
On the graph, the vertical line represents New Jersey's statewide mortality rate in 1999 of 2.89 percent. Each hospital's performance is displayed graphically in relation to this statewide average.

Figure 2 shows one hospital—Jersey Shore Medical Center—with its bar completely to the left of the statewide average line. This means that this hospital's mortality rate was significantly below the statewide average.

The other 13 hospitals have bars that cross the average line. That means that their rates were not statistically different than the statewide average.

The graph in Figure 3 shows the risk-adjusted mortality for each of the 52 surgeons who performed at least 100 isolated bypass surgery operations in at least one hospital in New Jersey in

FIGURE 1:
NUMBER OF ISOLATED CORONARY ARTERY BYPASS GRAFT SURGERIES (1999)



SOURCE: New Jersey Department of Health and Senior Services

1998–99. The surgeons are grouped by hospital. Once again, the graph has a vertical line representing New Jersey's statewide mortality rate of 2.74 percent for 1998–1999. Each surgeon's performance is displayed graphically in relation to this statewide average for the two years.

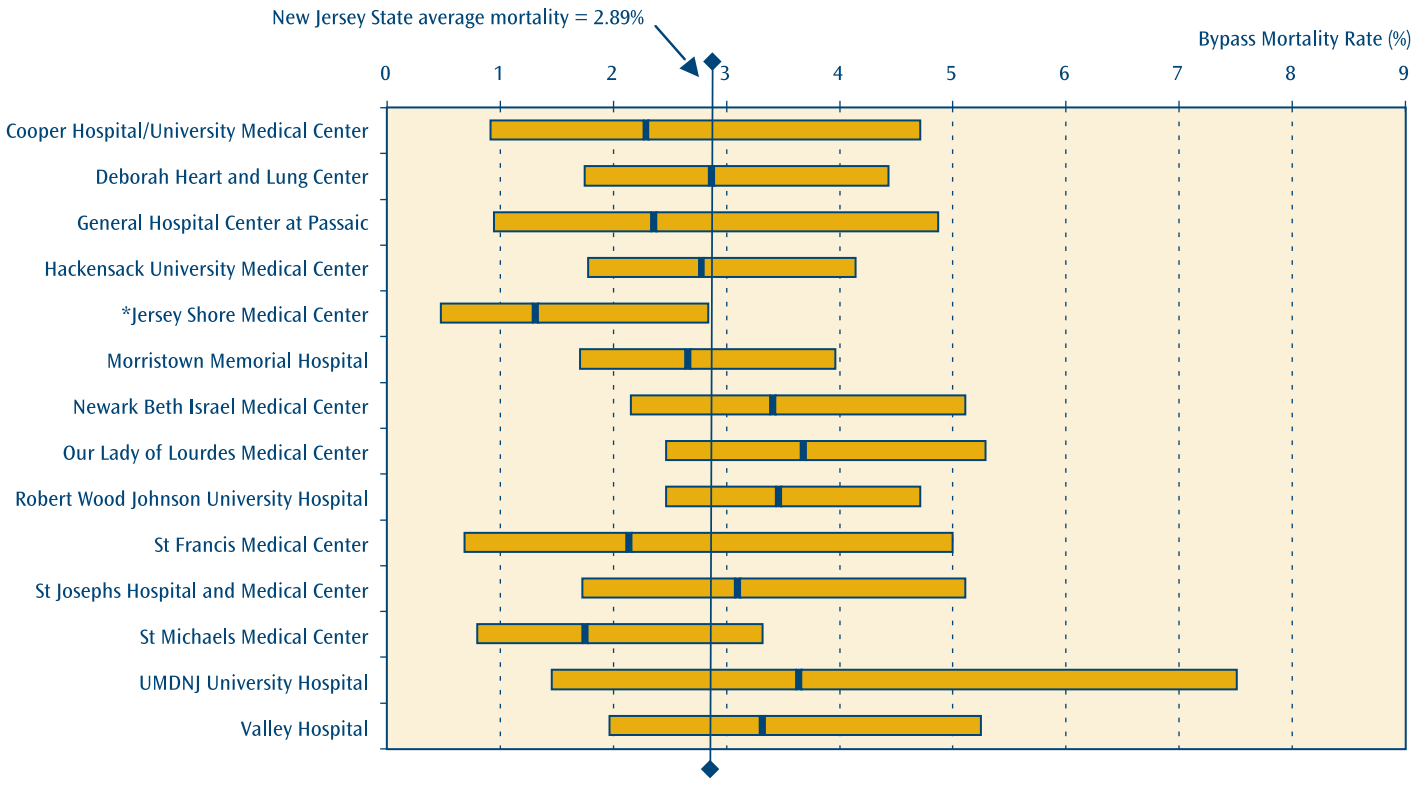
The graph shows that three surgeons had risk-adjusted patient mortality estimates significantly higher than the state average. It shows three other surgeons whose patient mortality estimates were significantly lower than the state average. For the majority of bypass surgeons, however, the risk-adjusted patient mortality estimates were not statistically different than the state average.

Statistical Significance

In trying to determine a hospital's or surgeon's performance, it is important to account for the fact that some differences occur simply due to chance or random variation. Statistical tests are conducted on the data so that we can be as certain as possible that the differences are due to actual differences in performance. A difference is called "**statistically significant**" when it is large enough that it is not likely to result from chance or random variation.

The dark portion in the middle of each hospital's bar represents its calculated risk-adjusted mortality rate. However, we can't really be certain that number is the precise rate. We can only be relatively sure that the true rate falls somewhere on the bar. In analyzing data, we use what is called a "95 percent confidence interval," and the bar represents this confidence interval. This means we are 95 percent confident that the hospital's true risk-adjusted mortality rate falls within the range shown by the bar. Another way of saying this is that the bar

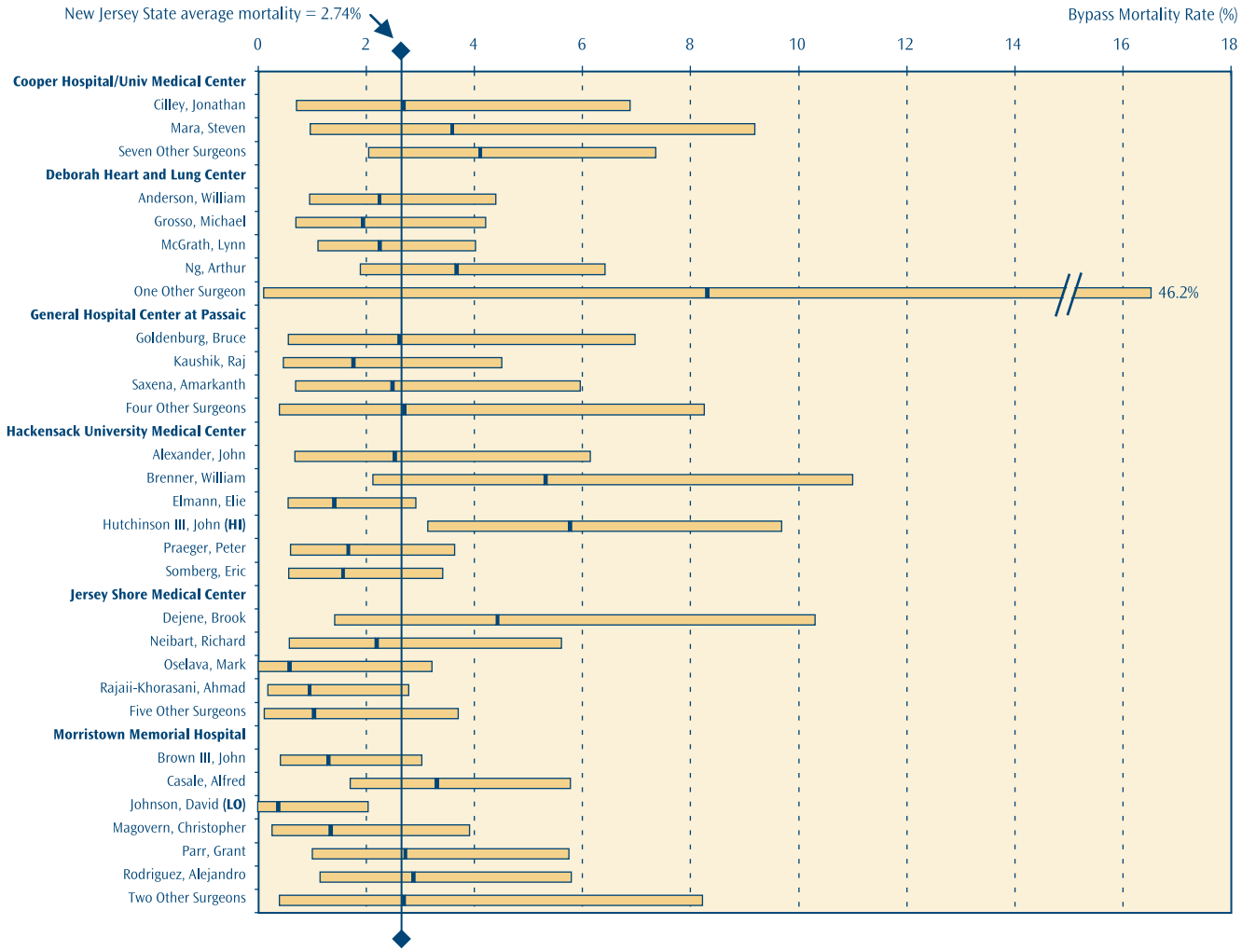
FIGURE 2:
HOSPITAL RISK-ADJUSTED MORTALITY (1999)



SOURCE: New Jersey Department of Health and Senior Services.

* Risk-adjusted mortality rate significantly lower than the New Jersey mortality rate when evaluated with a 95 percent confidence interval.

FIGURE 3:
SURGEON RISK-ADJUSTED MORTALITY (1998–99)



SOURCE: New Jersey Department of Health and Senior Services

NOTES: **(LO)**—Risk-adjusted mortality rate significantly lower than the New Jersey mortality rate when using a 95 percent confidence interval

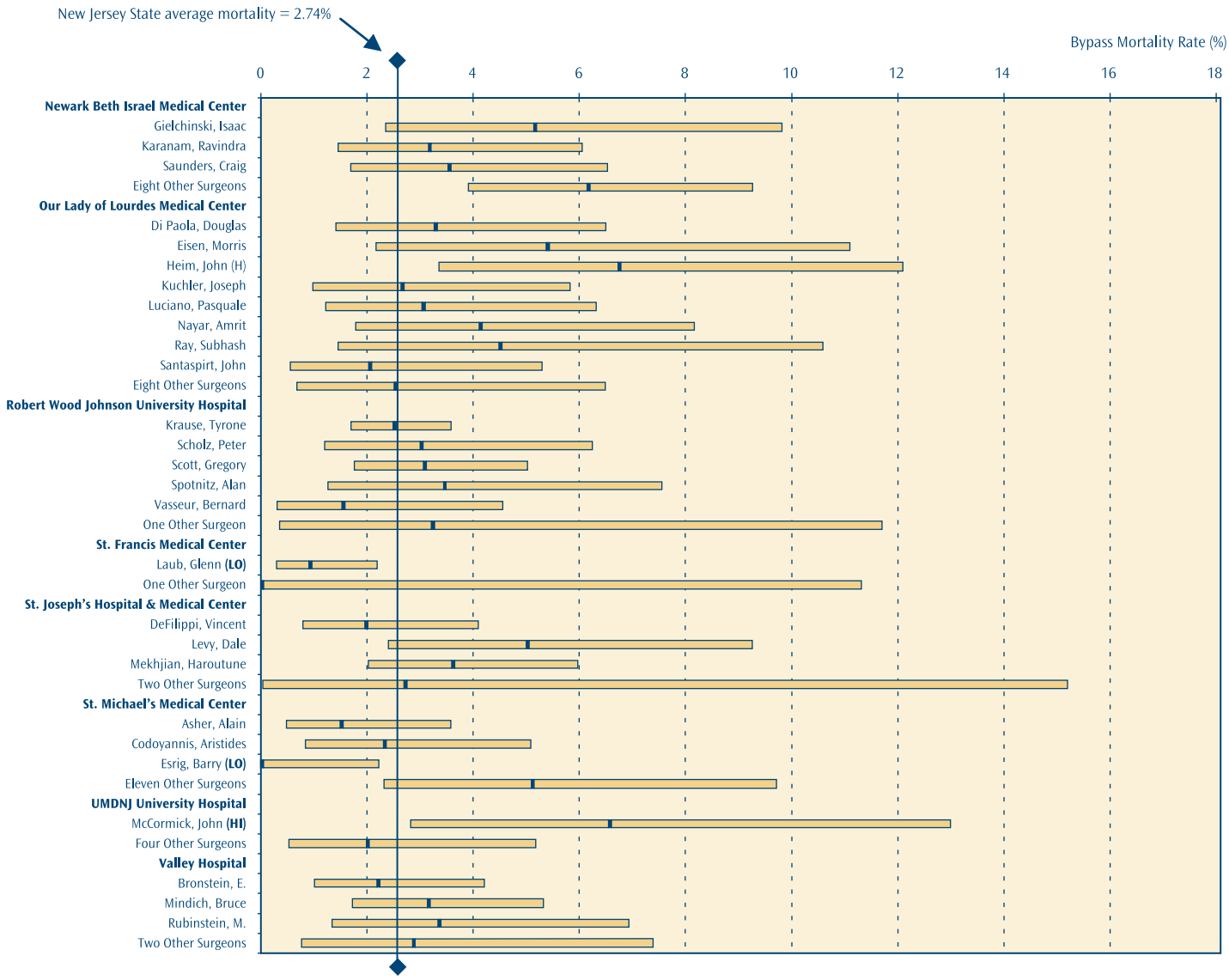
(HI)—Risk-adjusted mortality rate significantly higher than the New Jersey mortality rate when using a 95 percent confidence interval

represents the statistical margin of error for the calculation of that rate.

When using this report, it is important to remember that the charts are designed to show whether a hospital's or surgeon's risk-adjusted mortality rate is significantly above or below the statewide rate, or whether a rate is statistically the same as the statewide rate. It is more important therefore, to view the bars in relation to the average line than it is to examine the individual calculated rates, or circles, on the bars. The chart should not be used to make hospital-to-hospital or surgeon-to- surgeon comparisons, only to compare hospitals and surgeons to the statewide rate, respectively.

In examining the charts, you will see that some bars are shorter than others. The bar is shorter for hospitals or surgeons performing more surgeries, and longer for those with lower volumes. This reflects the fact that larger numbers—in this case, more surgeries—increase the precision of a statistic.

FIGURE 3 (continued):
SURGEON RISK-ADJUSTED MORTALITY (1998–99)



SOURCE: New Jersey Department of Health and Senior Services

NOTES: **(LO)**—Risk-adjusted mortality rate significantly lower than the New Jersey mortality rate when using a 95 percent confidence interval

(HI)—Risk-adjusted mortality rate significantly higher than the New Jersey mortality rate when using a 95 percent confidence interval

Questions and Answers

These are some commonly asked questions that may be of interest to you as you read this report.

Should I go only to the hospitals or surgeons with below-average risk-adjusted mortality rates?

Not necessarily. There are many factors to consider in determining the best hospital for you. Among these are your own personal risk factors and the experience certain hospitals have treating patients with those risk factors. Before making up your mind, you should discuss this report with the physician, usually a cardiologist, who refers you for cardiac surgery. The cardiologist's knowledge and expertise will be a valuable guide in making your decision. You should also keep in mind that the data in this guide is from 1999 and that a hospital's performance may have changed since then.

Why doesn't the report contain data for surgeons who performed fewer than 100 bypass operations in 1998–99?

When a surgeon performs a relatively small number of procedures, it is difficult to give a statistically precise estimate of that surgeon's performance. As a result, the Department has omitted individual data for this group.

Does that mean that I should avoid any surgeon whose name is not included in this report?

No, not necessarily. First, there are lower volume surgeons with good patient outcomes. Second, there may be a good explanation for why a surgeon had a low volume that is unrelated to his/her experience. For example, the surgeon may have recently moved from another state, where he/she performed a high volume of these procedures. It is best to discuss your concerns with your referring physician.

Should I refuse to go to a hospital for heart surgery if that hospital has a worse than average mortality record?

Important decisions in areas such as cardiac surgery should be made after considering all available information. The statistics in this report are a starting point for discussions with your doctor. But they do not tell the complete story. That is why it is critical to bring your concerns and questions to your doctor.

Is it better to go to a hospital with a high volume of cases and a surgeon who handles a large number of cases?

National studies have demonstrated that in general, hospitals and surgeons with higher volumes have better results. However, some surgeons and hospitals with high volumes have relatively high mortality, while others with low volumes have lower mortality.

Notes on Data

The data used in this study were reported by hospitals according to criteria established by the Department of Health and Senior Services, with assistance from the clinical experts. The data were audited by an independent reviewer under contract to the Department.

Throughout the process of developing this report, the Department has taken steps to make sure that all hospitals were informed about data reporting and auditing requirements as well as the statistical methods being used to risk-adjust the reported mortality data.

The Department considers a vital function of hospitals to be able to collect and report complete, accurate medical information on patients. This function is critical not only to the success of the cardiac surgery report, but to the hospitals' and surgeons' own ongoing efforts to improve the quality of care for all patients. The Department and hospitals will continue working to improve data collection procedures so that this report contains the best, most useful information possible.

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